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Zhang

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(54) **INSTANT MESSAGING ROBOT TO PROVIDE PRODUCT INFORMATION**

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G06Q 30/06 (2012.01)
(Continued)

(52) **U.S. Cl.**
CPC ***G06Q 30/0625*** (2013.01); ***G06F 17/30569*** (2013.01); ***G06Q 30/0269*** (2013.01); ***G06Q 30/0611*** (2013.01); ***H04L 51/04*** (2013.01); ***H04L 67/10*** (2013.01)

(58) **Field of Classification Search**
CPC G06Q 30/0611; H04L 51/04; G06F 17/30569
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See application file for complete search history.

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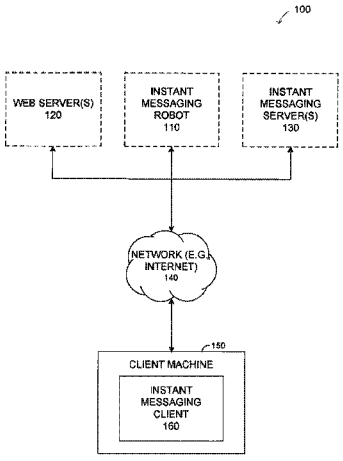
(74) *Attorney, Agent, or Firm* — Schwegman, Lundberg & Woessner, P.A.

(57) **ABSTRACT**

Methods and systems to automatically respond to a request for product information are described. In one embodiment, a data collection module may collect product data, over a network, identify that the product data is related to a particular product, and store the product data and an association between the product data and the particular product in a database. An instant messaging engine may receive a request for the product data after the product data is stored in the database and an interpreter module may identify, in response to the request, the request to correspond to the particular product and retrieve the product data based on the association between the particular product and the product data. The instant messaging engine may also transmit, using an instant messaging protocol, a response to the request, the response including the product data.

20 Claims, 9 Drawing Sheets



(51) **Int. Cl.**

G06Q 30/02	(2012.01)
H04L 12/58	(2006.01)
G06F 17/30	(2006.01)
H04L 29/08	(2006.01)

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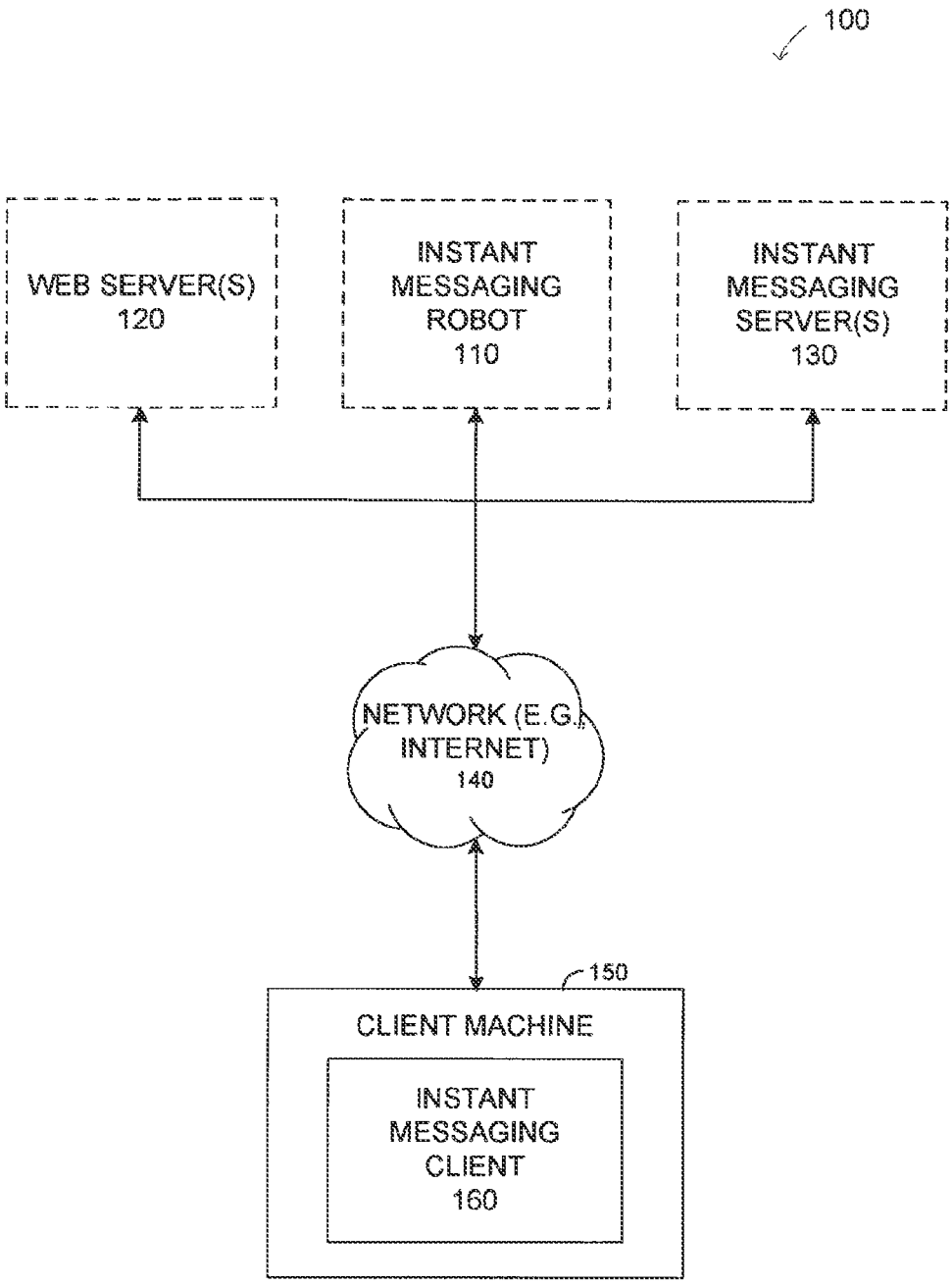
100
WEB SERVER(S)
120
INSTANT
MESSAGING
ROBOT
110
INSTANT
MESSAGING
SERVER(S)
130
NETWORK (E.G.
INTERNET)
140
150
CLIENT MACHINE
INSTANT
MESSAGING
CLIENT
160

Figure 1

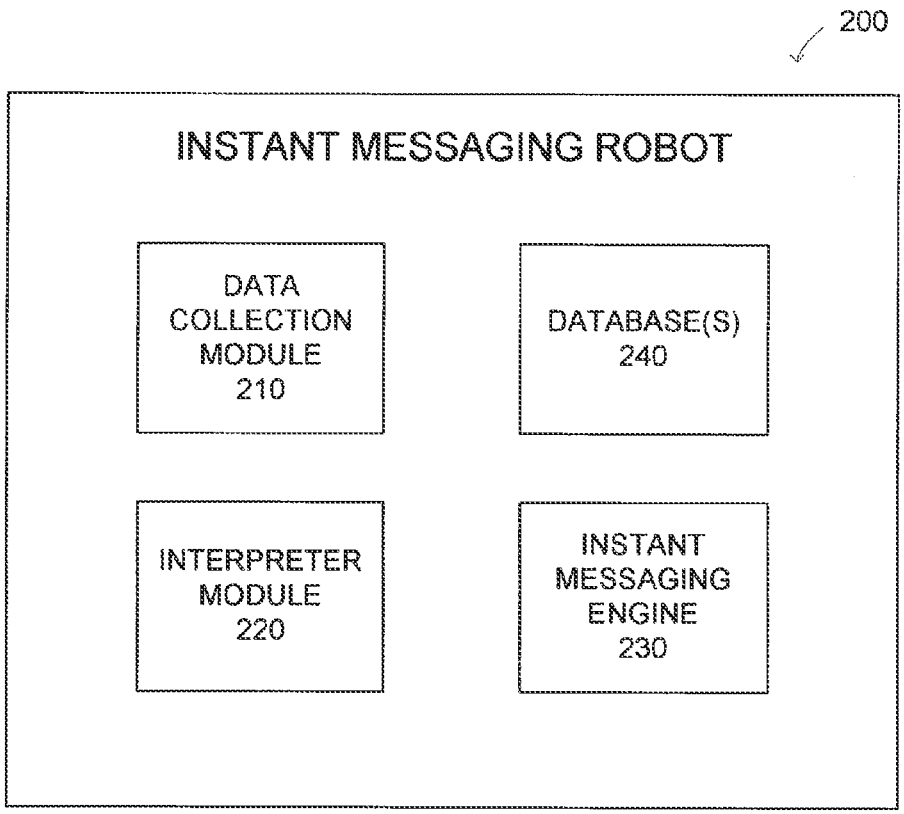
200
INSTANT MESSAGING ROBOT
DATA COLLECTION MODULE 210
DATABASE(S) 240
INTERPRETER MODULE 220
INSTANT MESSAGING ENGINE 230

Figure 2

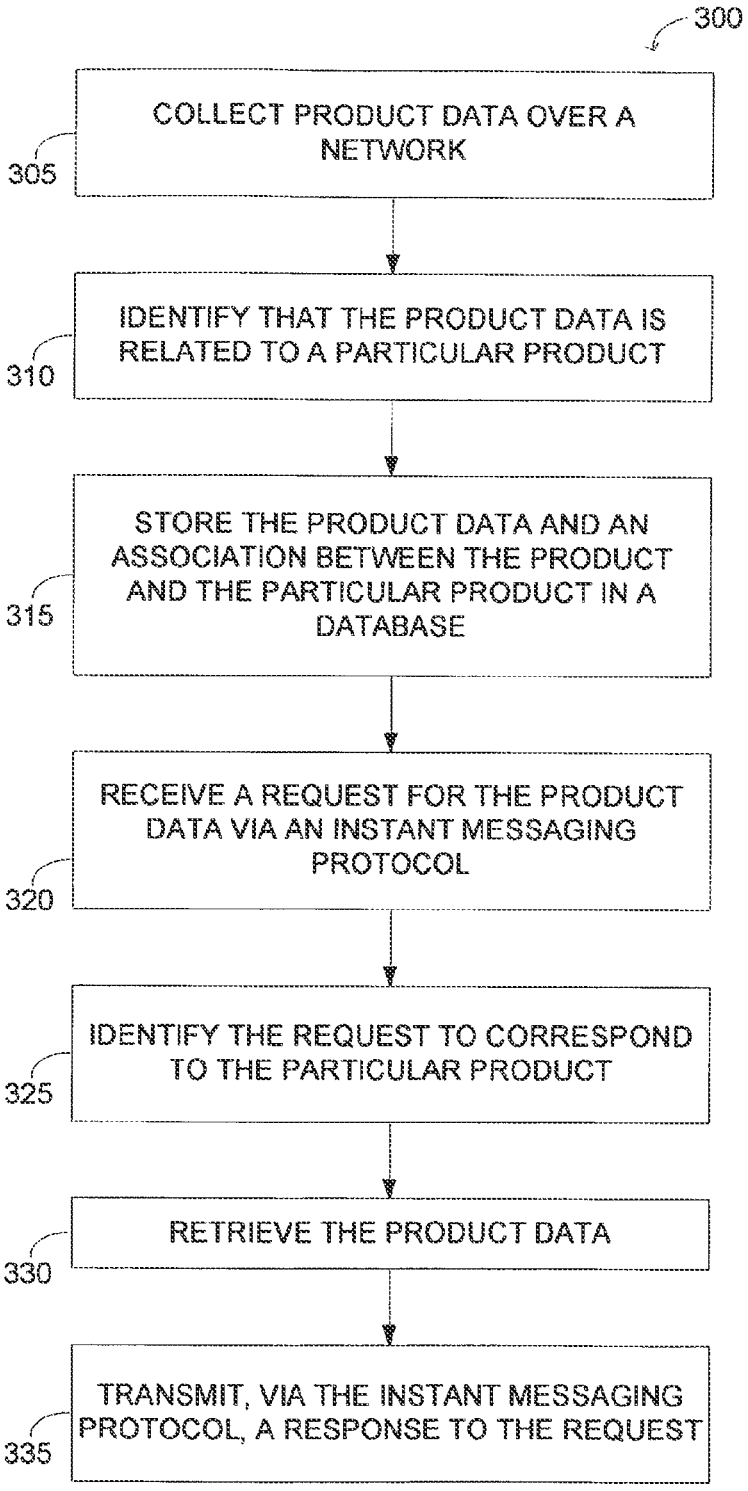
300
COLLECT PRODUCT DATA OVER A NETWORK
305
IDENTIFY THAT THE PRODUCT DATA IS RELATED TO A PARTICULAR PRODUCT
310
STORE THE PRODUCT DATA AND AN ASSOCIATION BETWEEN THE PRODUCT AND THE PARTICULAR PRODUCT IN A DATABASE
315
RECEIVE A REQUEST FOR THE PRODUCT DATA VIA AN INSTANT MESSAGING PROTOCOL
320
IDENTIFY THE REQUEST TO CORRESPOND TO THE PARTICULAR PRODUCT
325
RETRIEVE THE PRODUCT DATA
330
TRANSMIT, VIA THE INSTANT MESSAGING PROTOCOL, A RESPONSE TO THE REQUEST
335

Figure 3

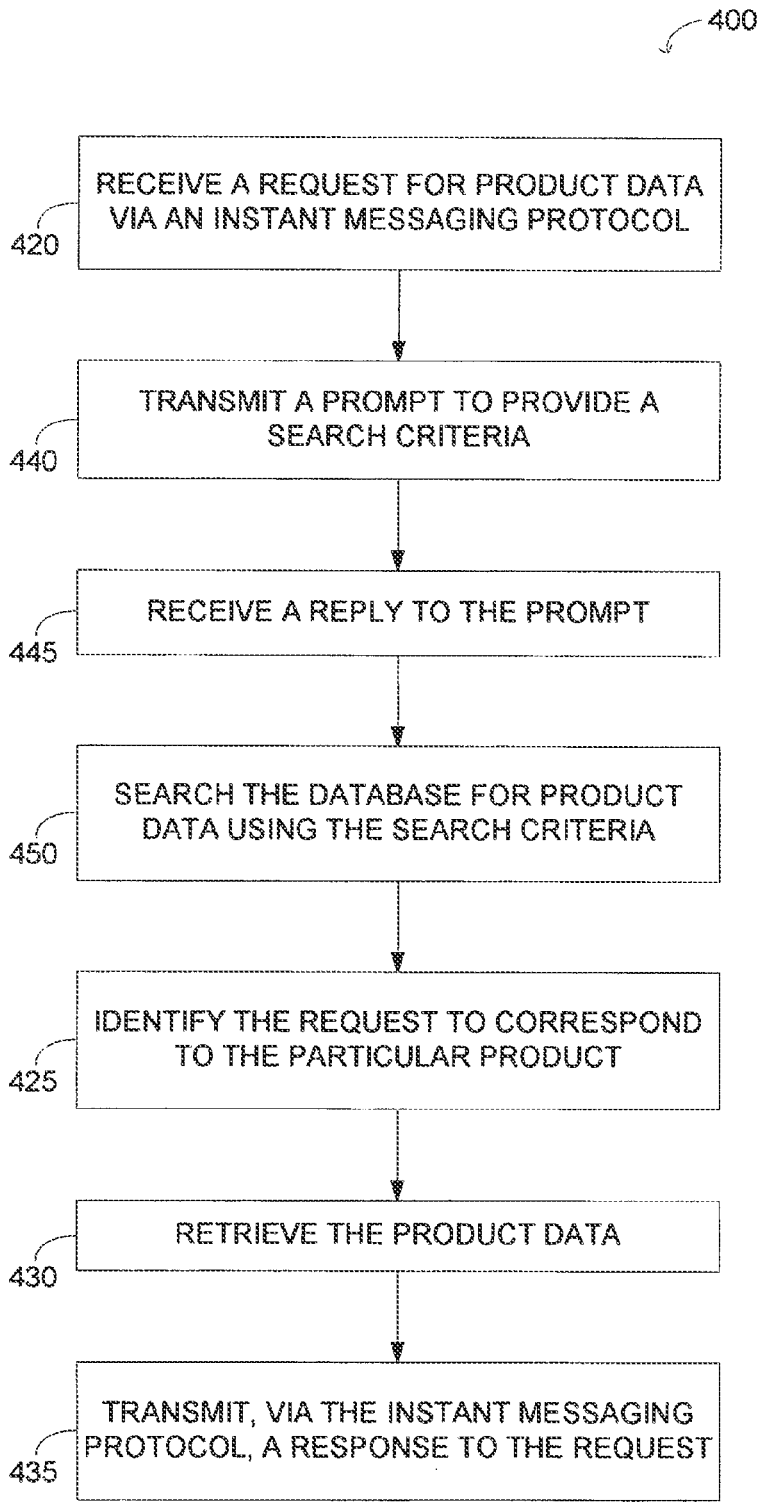
400
RECEIVE A REQUEST FOR PRODUCT DATA VIA AN INSTANT MESSAGING PROTOCOL
420
TRANSMIT A PROMPT TO PROVIDE A SEARCH CRITERIA
440
RECEIVE A REPLY TO THE PROMPT
445
SEARCH THE DATABASE FOR PRODUCT DATA USING THE SEARCH CRITERIA
450
IDENTIFY THE REQUEST TO CORRESPOND TO THE PARTICULAR PRODUCT
425
RETRIEVE THE PRODUCT DATA
430
TRANSMIT, VIA THE INSTANT MESSAGING PROTOCOL, A RESPONSE TO THE REQUEST
435

Figure 4

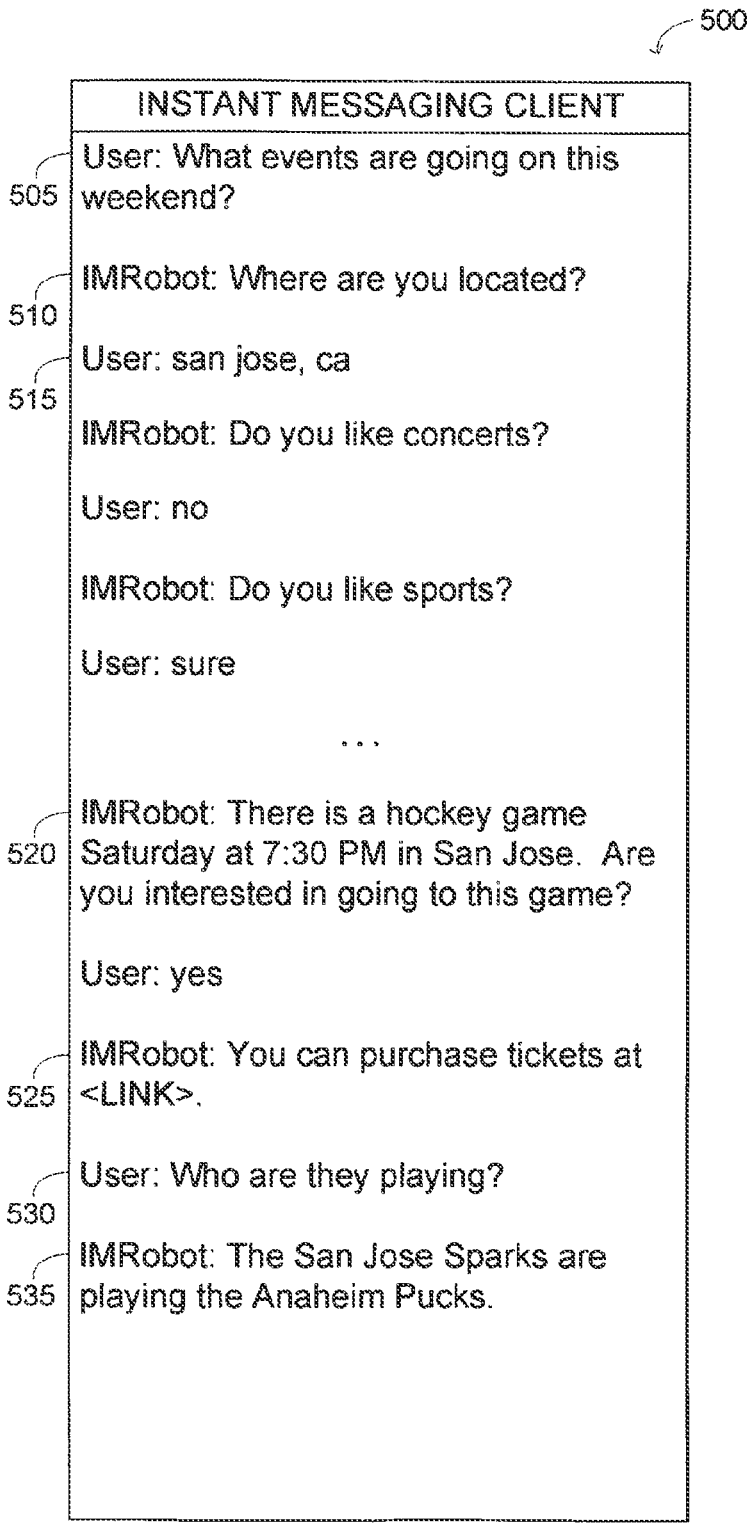
500
INSTANT MESSAGING CLIENT
User: What events are going on this weekend?
505
IMRobot: Where are you located?
510
User: san jose, ca
515
IMRobot: Do you like concerts?
User: no
IMRobot: Do you like sports?
User: sure
. . .
IMRobot: There is a hockey game Saturday at 7:30 PM in San Jose. Are you interested in going to this game?
520
User: yes
IMRobot: You can purchase tickets at <LINK>.
525
User: Who are they playing?
530
IMRobot: The San Jose Sparks are playing the Anaheim Pucks.
535

Figure 5

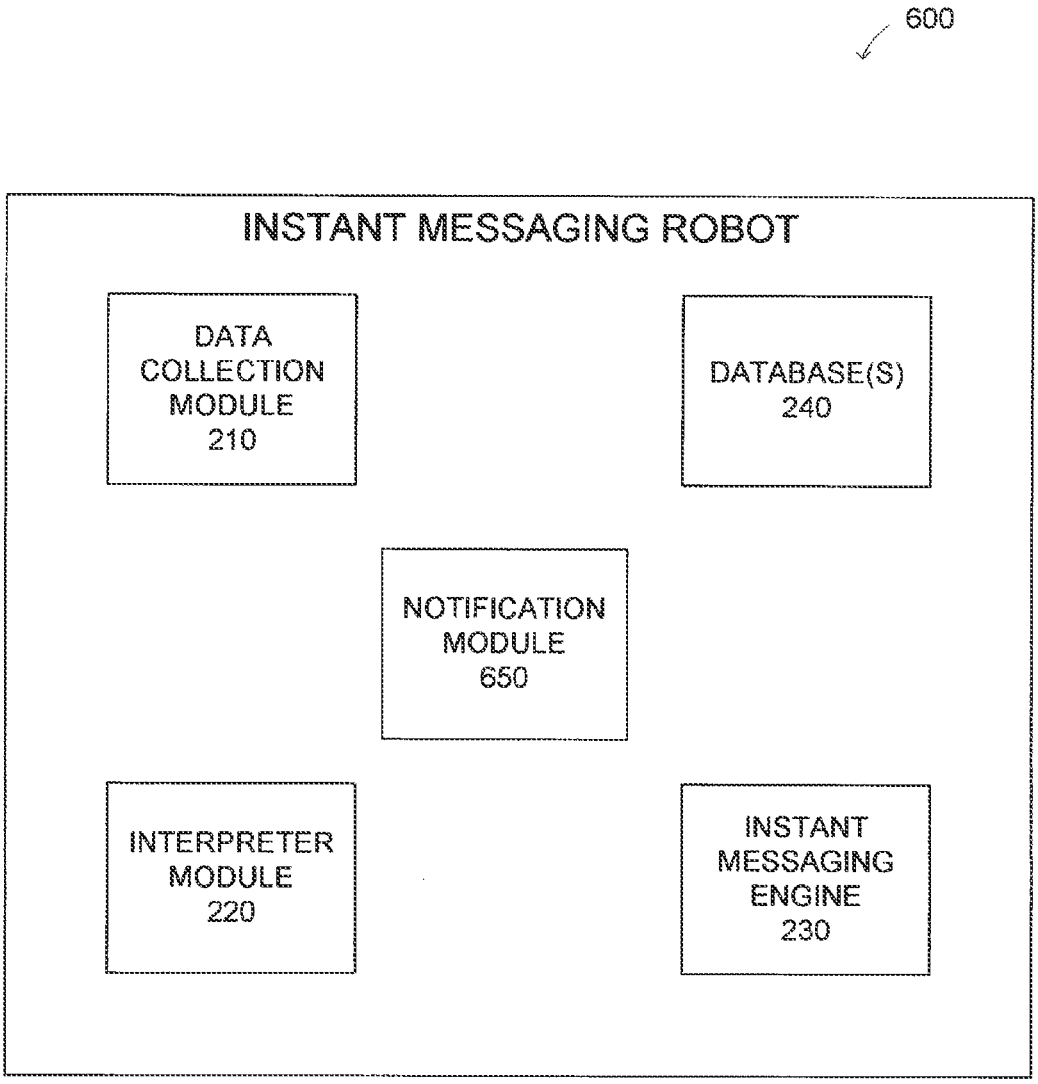
600
INSTANT MESSAGING ROBOT
DATA COLLECTION MODULE 210
DATABASE(S) 240
NOTIFICATION MODULE 650
INTERPRETER MODULE 220
INSTANT MESSAGING ENGINE 230

Figure 6

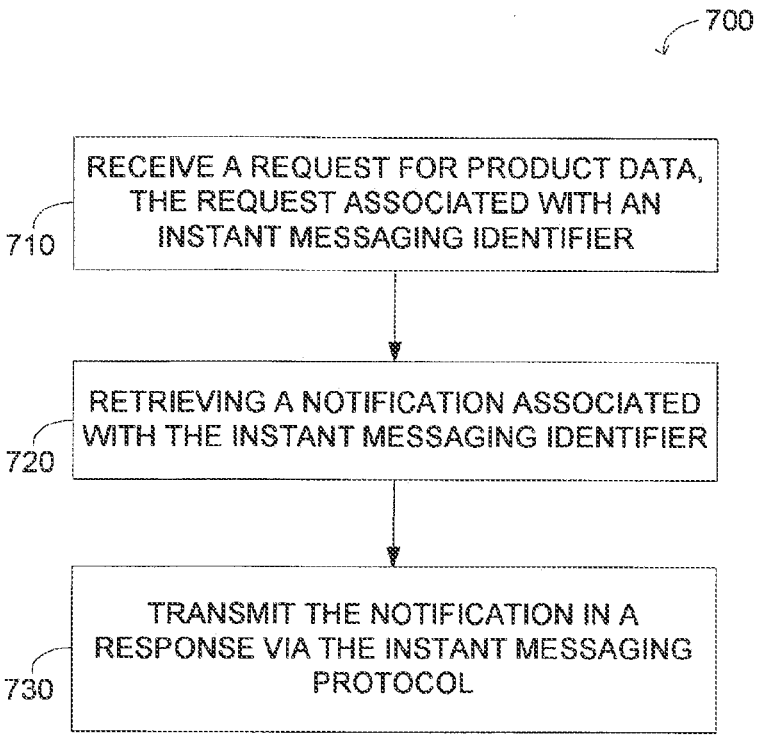
700
RECEIVE A REQUEST FOR PRODUCT DATA, THE REQUEST ASSOCIATED WITH AN INSTANT MESSAGING IDENTIFIER
710
RETRIEVING A NOTIFICATION ASSOCIATED WITH THE INSTANT MESSAGING IDENTIFIER
720
TRANSMIT THE NOTIFICATION IN A RESPONSE VIA THE INSTANT MESSAGING PROTOCOL
730

Figure 7

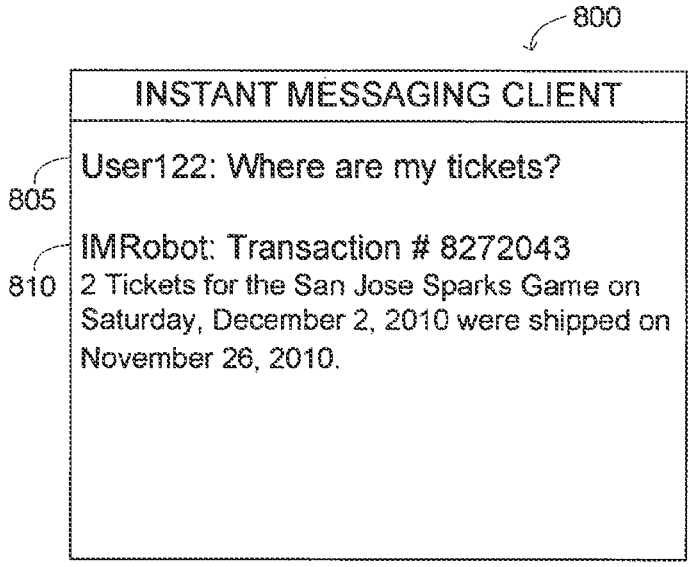

Figure 8A

Figure 8B

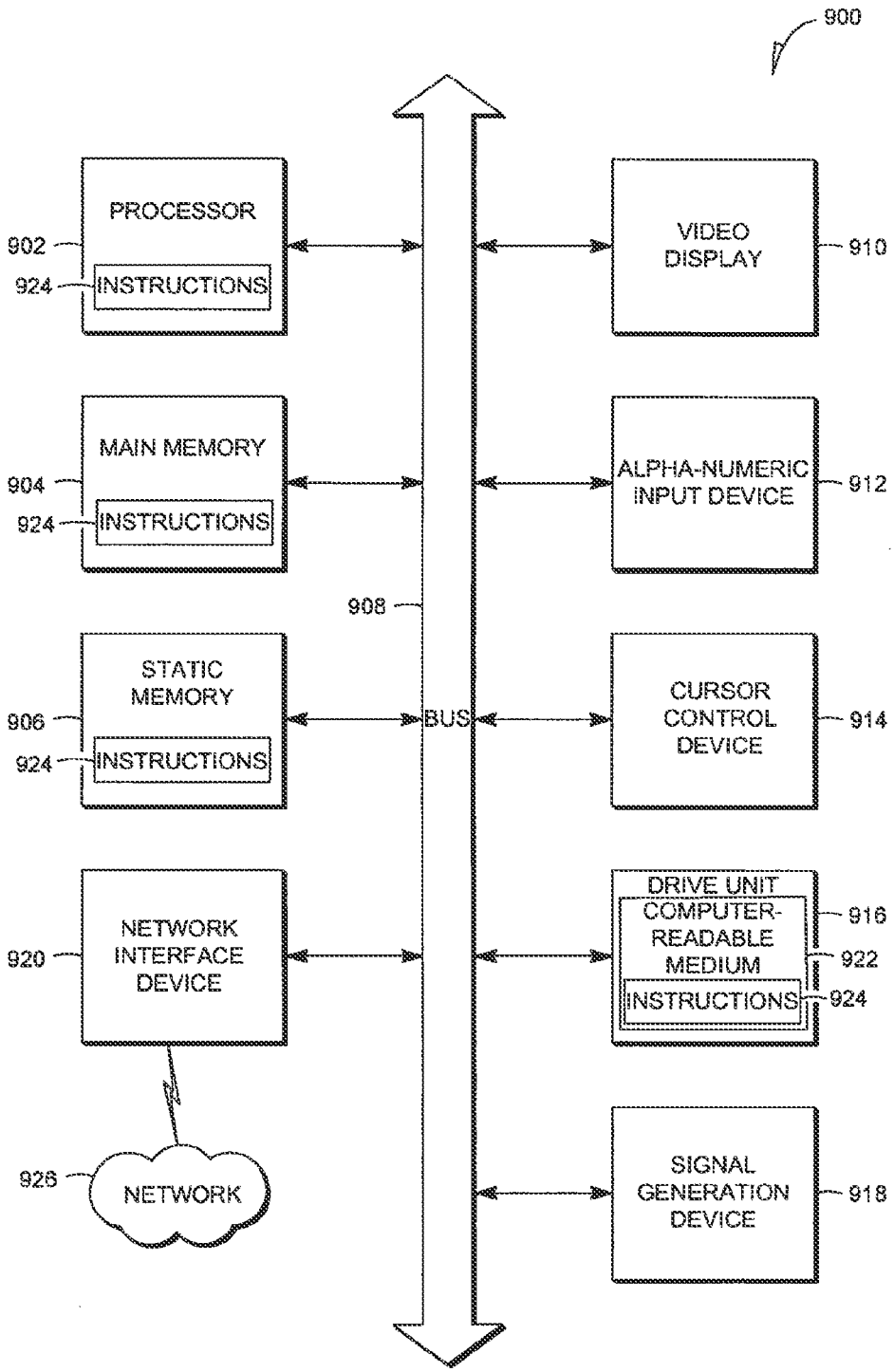
900
PROCESSOR
902
924
INSTRUCTIONS
MAIN MEMORY
904
924
INSTRUCTIONS
908
STATIC MEMORY
906
924
INSTRUCTIONS
BUS
NETWORK INTERFACE DEVICE
920
926
NETWORK
VIDEO DISPLAY
910
ALPHA-NUMERIC INPUT DEVICE
912
CURSOR CONTROL DEVICE
914
DRIVE UNIT
COMPUTER-READABLE MEDIUM
916
922
INSTRUCTIONS
924
SIGNAL GENERATION DEVICE
918

Figure 9

INSTANT MESSAGING ROBOT TO PROVIDE PRODUCT INFORMATION

RELATED APPLICATION

This application Is a continuation of U.S. patent application Ser. No. 13/865,768, filed on Apr. 18, 2013, which is a continuation of U.S. patent application Ser. No. 13/505,362, filed on May 1, 2012, which is the national stage of International Patent Application Serial No. PCT/CN2010/001117, filed on Jun. 23, 2010, the benefit of priority of each of which is claimed hereby, and each are incorporated herein by reference in their entirety.

TECHNICAL FIELD

The present application relates generally to the technical field of use of communication over a network such as the Internet, More specifically, the present application relates to automatically responding, over the network, to a request for information.

BACKGROUND

Advancements in computer and networking technologies have enabled persons to find information about products and services or conduct commercial and financial transactions "on-line" via computer-based applications. A number of entities have established their presence on the Internet by operating websites that provide information on products and sendees, reviews of products or services, or facilitate acquisition of product or services.

A common goal for many enterprises is to attract customers to their websites or advertise their products and services. For example, some enterprises advertise on other websites, on television, on the radio, or print media. Some enterprises also attempt to reach customers by emailing or mailing advertisements or coupons to customers directly.

Advancements in computer and networking technologies have also enabled people to communicate "instantly" or in near-real-time through the use of instant messaging (IM) protocols, short messaging service (SMS) protocols, multiple messaging service (MMS) protocols, or instant messaging applications embedded in web browsers.

Despite the many technical advances, a great number of technical challenges and problems remain. One such problem involves determining other ways to attract customers to a website and give customers a better user experience. Another such problem involves interacting with, a customer to determine their interests in an efficient manner and delivering content that fits the customer's interests.

BRIEF DESCRIPTION OF THE DRAWINGS

Some embodiments are illustrated by way of example and not limitation in the figures of the accompanying drawings in which:

FIG. **1** is a block diagram illustrating a network environment within which an instant messaging (IM) robot may be implemented in accordance with one example embodiment;

FIG. **2** is a block diagram illustrating an IM robot in accordance with one example embodiment;

FIG. **3** is a flow diagram illustrating a method to automatically respond to a user, according to various embodiments;

FIG. **4** is a flow diagram illustrating a method to automatically respond to a user, the method including prompting a user for search criteria, according to various embodiments;

FIG. **5** is a user interface illustrating a dialog between a user and an IM robot, according to various embodiments;

FIG. **6** is a block diagram illustrating an IM robot in accordance with one example embodiment;

FIG. **7** is a flow diagram illustrating a method to transmit a notification to a user, according to various embodiments;

FIG. **8**A is a user interface illustrating a dialog between a user and an IM robot, according to various embodiments;

FIG. **8**B is a user interface illustrating a dialog between a user and an IM robot, according to various embodiments;

FIG. **9** is a diagrammatic representation of a machine in the example form of a computer system, according to various embodiments.

DETAILED DESCRIPTION

Example methods and systems to automatically respond to a request for product information or transaction information are described. In the following description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of example embodiments. It will be evident, however, to one skilled in the art that the present invention may be practiced without these specific details.

An instant messaging (IM) robot is a system designed to interact with a user of an instant messaging client, often over a network. In some embodiments, IM robots are designed to simulate human interactions by using natural language processing systems to converting human language into something understandable to a machine (e.g., a computer) and converting information from a computer into natural language (e.g., human language). The IM robot may be configured to be compatible with one or more instant messaging protocols as well as other visually based messaging protocols such as short messaging service (SMS) protocols, multiple messaging sendee (MMS) protocols, or instant messaging applications embedded in web browsers.

In some embodiments the IM robot system may include various components that gather information about a product or transaction from various sources. For example, the IM robot system may "crawl" one or more websites and extract various product information associated with items or services. The IM robot may also be configured to access and examine instant message communications in order to monitor various data or search various databases or contact various servers to request product information or transaction data. A product, in this context, may be anything that may be the subject of a transaction. For example, a product may include any item or service that is able to be sold, leased, rented, etc. Products may include housing units for rent, tickets to events, menu items at restaurants, collectibles, etc. Products may also include services such as plumbing, medical or legal services, etc.

The IM robot system may use this information to provide a user of an instant messaging client suggestions and information about one or more products. The information and suggestions may be targeted toward the particular user based on a user's interests or characteristics that, are discovered through a dialog between the user and the IM robot. For example, when a user sends, via an instant messaging protocol, a message requesting product information to the IM robot, the IM robot may attempt to determine or narrow down suggestions or product information to those that match a user's interests. This may involve prompting the user for additional information or search criteria. At some point, the IM robot may perform a search and identify one or more products that are compatible with a user's interests. Then the

IM robot may respond to the user with information about the product. For example, the IM robot may supply the user with details about the product, product ratings, comments from users or owners of the product, a popularity level of a product, a link to more information about the product, a link to purchase the product, etc. In this way, certain embodiments of the IM robot may provide a benefit to the user by providing suggestions or product information targeted to the particular user. Certain embodiments of the IM robot may also provide a benefit to one or more websites by directing users interested in a particular product to the product site where the users may make a purchase.

In some embodiments where a user makes a purchase on a website associated with the IM robot, the IM robot may send a notification messages to the user via the user's instant messaging client. For example, the IM robot may send a notification message to the user to inform them that the user's payment has posted or that the item has shipped. In one embodiment, a user may request the status of one or more transactions from the IM robot and the IM robot may retrieve the statuses of the one or more transactions and communicate them to the user via the instant messaging protocol. In this way, the user may receive notifications and status updates without having to check their email account or login to the website.

FIG. **1** is a block diagram illustrating a network environment within which an instant messaging (IM) robot may be implemented in accordance with one example embodiment. The network environment **100** may include an IM robot **110**, one or more web servers **120**, an instant messaging server **130**, and one or more client machines **150** connected via a network **140** (e.g., the Internet). In one embodiment, the IM robot **110**, the web servers **120**, and the instant messaging server **130** may all be at the same location or machine. In other embodiments, however, they may all be on separate machines and connected via the network **140**. The web servers **120** may host one or more websites, such as an e-commerce website, a review website that posts reviews and ratings on products, a discussion forum website, or any other website that contains product information. Web servers **120** may also host data sources such as a database containing product information.

The instant messaging server **130** may enable an instant messaging client **160** on the client machine **150** to communicate with other instant messaging clients or the IM robot **110**. In other embodiments, however, instant messaging clients may be implemented using peer-to-peer technologies and the instant messaging server may not be needed.

As described in greater detail below, the IM robot **110** is configured to collect product data from various sources and communicate with an instant messaging client **160** on a client machine **150**. For example, the IM robot **110** may gather product data from the one or more web servers **120** or from a separate database. The IM robot **110** may also engage in a dialog with a user of the instant messaging client **160** and, depending on the dialog, communicate certain information to the instant messaging client **160**. The information communicated may include product information or transaction notifications. Further details and components of the IM robot will be explored below with respect to FIG. **2**.

FIG. **2** is a block diagram illustrating an IM robot in accordance with one example embodiment. As illustrated in FIG. **2**, IM robot **200** may comprise a data collection module **210**, an interpreter module **220**, an instant messaging engine **230**, and one or more databases **240**. As described more completely below, each module may be comprised of software instructions, computer hardware components, or a combination of both. To avoid obscuring the invention in unnecessary detail, only a few of the functions are described herein.

The data collection module **210** may be configured to collect various product data over a network. For example, the data collection module **210** may use a web-crawling component to access various websites on the internet and extract product data associated with various products. The data collection module **210** may access the website of a product manufacturer or retailer to extract product details or pricing information or may access review websites or retailer websites that contain product reviews or ratings to extract product reviews and ratings. Social networking websites where users may comment on products, share their comments about products, and discuss products with other members of their social network may also be accessed to extract product information. Other websites such as news media websites may be crawled as well in order to determine how often one or more products are mentioned. The data collection module **210** may also access various databases or other information sources to extract product information or monitor communications received by the IM robot.

After collecting the product data, the data collection module **210** may determine that the product data is related to a particular product. In one embodiment, the data collection module **210** may do this by recognizing that the product data is about the particular product. For example, when a webpage is being crawled or a database is being accessed, the data collection module **210** may identify a product name, product identifier, a manufacturer name, a model number, etc. that identifies the product that the product data on that webpage is about.

All this data may be analyzed to synthesize additional product data about a product. For example, the number and nature of the product reviews, the product ratings, the date the reviews and ratings were submitted, the number of mentions in various websites over a certain period of time, or the number of instant message communications about a product received by the IM robot over a certain period of time may be used to generate a popularity score for a product. The data collection module **210** may also store the collected and synthesized product data collected and an association between the product data and the particular product the product data is about in, for example, a database **240**.

The instant messaging engine **230** may be configured to interact with an instant messaging client **160** of FIG. **1** either via an instant messaging server **130** or directly. The instant messaging engine **230** may support one or more communication protocols including one or more instant messaging protocols. For example, the instant messaging engine may determine which communication protocol a messaging client is using and configure further communications with the messaging client to conform to that communication protocol. In this way, an instant messaging engine **230** may send and receive communications from one instant messaging client **160** using one instant messaging protocol and send and receive communications from another instant messaging client **160** using a different instant messaging protocol.

The interpreter module **220** may be configured to interpret communications from a user of an instant messaging client **160** and generate responses to the communications. In some embodiments, a natural language processor may be used to convert natural language (e.g., human language) received from the user of the instant messaging client **160** into a more formal representation that may be better understood by a machine. The natural language processor may also convert machine data, for example, information from a database, into a natural language more easily read or understood by a user.

As will be discussed further below, the interpreter module **220** may engage in a conversation with a user of the instant messaging client **160**, determine that a received communication is a request for product data, identity that, the request, corresponds with one or more products, retrieve the product data for the one or more products, and generate a response to be transmitted to the instant messaging client **160** that includes the product data.

FIG. **3** is a flow diagram illustrating a method to automatically respond to a user, according to various embodiments. One or more of the operations of this or other methods disclosed herein may be performed using one or more processors. The method **300** begins at operation **305**, when the data collection module **210** of FIG. **2** collects product, data over a network. As mentioned above, in various embodiments, this may involve crawling various websites, accessing one or more databases containing product information, and monitoring IM communications to the IM robot. At operation **310**, for each piece of collected product data, the data collection module **210** identifies that the piece of product data is related to a particular product. The relationship between the piece of product data and the particular product may be tracked by storing the product data and an association between the product data and the particular product in a database at operation **315**. The association between the product data and the particular product may be stored in several ways depending on which data record and database structures are used. For example, product data may be stored in a product data record that includes a product identifier indicating the particular product associated with the product data. Alternatively, product data may be stored in a product record of the particular product associated with the product data.

At operation **320**, the instant messaging engine **230** of the IM robot **200** both of FIG. **2** receives a request for product data via an instant messaging protocol. The request for product data may be for product data associated with a specific product or product data in general. At operation **325**, the interpreter module **220** of FIG. **2** identifies that the request corresponds to one or more particular products. In some embodiments, the identification of the particular products is based on the popularity score of a product. For example, if a request from a user does not identify a specific product, (e.g., "What are some good cameras?") the interpreter module **220** may identify one or more products (in this case camera models) based on the product's popularity scores (e.g., the 3 camera models with the highest popularity scores).

After one or more products are identified, the interpreter module **220** then retrieves the product data based on the association between the particular product and the product data at operation **330** and generates a response to the request that includes the product data. At operation **335**, the instant messaging engine **230** transmits the response to the sender of the request via the same instant messaging protocol.

On occasion, a user may express their interests broadly in a request for product data. These requests for product data may be too general to identify one or more particular products or if products may be identified, the resulting responses may present too much information to the user. For example, a user of an instant messaging client **160** of FIG. **1** may ask the IM robot "What are some good cameras?" In some instances, retrieving product data on the top rated or most popular cameras may not be helpful to the user. As a result, in some embodiments, the IM robot may be configured to narrow down a user's request for product data by adding additional criteria. FIG. **4** is a flow diagram that illustrates these embodiments.

FIG. **4** is a flow diagram illustrating a method **400** to automatically respond to a user, the method including prompting a user for search criteria, according to various embodiments. At operation **420**, the instant messaging engine **230** of FIG. **2** receives a request for product data via an instant messaging protocol. This request may be too general and not reflect a user's true interests. As a result, the interpreter module **220** of FIG. **2** determines that additional search criteria are needed. The interpreter module **220** may generate one or more prompts (e.g., questions) to provide search criteria. The one or more questions or prompts may be transmitted to an instant messaging client **160** of FIG. **1** by the instant messaging engine **230** at operation **440**. The user may read the prompt and reply. At operation **445**, the instant messaging engine **230** receives the reply to the prompt and converts the reply to search criteria. If additional search criteria are needed, additional prompts may be generated and transmitted in the same manner.

When enough search criteria are obtained, the interpreter module **220** searches a database for product data using the user's request for product data and the additional search criteria (operation **450**). Based on the search results, the interpreter module **220** identifies one or more particular products that the request corresponds to (operation **425**). The interpreter module **220** then retrieves the product data (operation **430**), generates a response to the request that includes the product data, and the instant messaging engine **230** transmits the response to the request to the instant messaging client **160** of the user via the instant messaging protocol (operation **435**). An example user interface illustrating the prompts generated by the interpreter module **220** and a user's replies to the prompt is shown with respect to FIG. **5**.

FIG. **5** is a user interface **500** illustrating a dialog between a user and an IM robot, according to various embodiments. As illustrated in FIG. **5**, the user interface **500** is an instant messaging client on a client machine that shows messages of the user (User) and the IM robot (IMRobot). In this fictional scenario, a user requests product data with message **505** ("What events are going on this weekend?"). As discussed above, this request for product data may be too broad and the interpreter module **220** of FIG. **2** may determine that more search criteria are needed. Prompts for the user to provide search criteria may be generated and transmitted to the user's instant messaging client as shown in message **510** ("Where are you located?"). The user may reply to the prompt as shown in message **515** ("san jose, ca.").

Additional search criteria may be gathered from the user and at some point, the interpreter module **220** will determine that enough search criteria are obtained and search a database. One or more products may be identified as corresponding to the user's request and product data of the one or more identified products may be retrieved and transmitted to the user as illustrated by message **520** ("There is a hockey game Saturday at 7:30 PM in San Jose."). The interpreter module **220** may further include a message to the user confirming the user's interest in the identified product ("Are you interested in going to this game?") and, in response, providing additional product data, for example, at message **525**, the IM robot provides a user with a link to purchase tickets to the game.

In some cases a user may request additional details about a product as illustrated in message **530** ("Who are they playing?). In response to the user's question, the interpreter module **220** may identify the additional product data requested by the user, retrieve it, generate a response that includes the additional product data, and transmit the response to the user's instant messaging client as seen in message **535** ("The San Jose Sparks are playing the Anaheim Pucks.").

If the user selects the link to purchase the product (in this case tickets to the game), a user may be taken to a user interface such as a web page or application interface where the user can make a transaction associated with the product (e.g., purchase the product). During the transaction process, the user may be asked for art instant messaging identifier (e.g., a screen name). If the user provides his instant messaging identifier, it may be stored at a web server **120** of FIG. **1** of an ecommerce website or in another database such as a database **240** associated with the IM robot **200** both of FIG. **2**. In various embodiments, the user's instant messaging identifier may later be used by the IM robot **200** to communicate notifications, such as notifications associated with the transaction, to a user. FIG. **6** further illustrates these embodiments.

FIG. **6** is a block diagram illustrating an IM robot **600** in accordance with one example embodiment. Similar to the IM robot **200** shown in FIG. **2**, IM robot **600** shown in FIG. **6** may include a data collection module **210**, an interpreter module **220**, an instant messaging engine **230**, and one or more databases **240**. In addition to these components, however, IM robot **600** may also include a notification module **650**. The notification module **650** may be configured to determine that a notification event has occurred and generate a notification message. The notification message may then be sent by the instant messaging engine **230** to an instant messaging client **160** of FIG. **1** associated with the instant messaging identifier (e.g., a screen name) either directly or via an instant messaging server **130** shown in FIG. **1**. In one embodiment, if an instant messaging client **160** associated with the instant messaging identifier is not available (e.g., a user associated with the instant messaging identifier is not signed on), the transmission of the notification message may be delayed by the notification module **650** or the instant messaging server **130** until an instant messaging client **160** associated with the instant messaging identifier is available.

In some embodiments, the notification messages are generated automatically, in response to a notification event. In other embodiments, however, notification messages may be generated in response to receiving a request from a user using an instant messaging client **160** associated with the instant messaging identifier. FIG. **7** helps to illustrate one such embodiment.

FIG. **7** is a flow diagram illustrating a method **700** to transmit a notification to a user, according to various embodiments. At operation **710**, the instant messaging engine **230** of FIG. **6** may receive a request for product data (e.g., a status update regarding a purchase of a product) from an instant messaging client **160** of FIG. **1** associated with the instant messaging identifier. This instant messaging engine **230** may be able to determine that the request is associated with an instant messaging identifier (e.g., the request is associated with the instant messaging identifier of the sender of the request). The notification module **650**, at operation **720**, may retrieve a notification message associated with the instant messaging identifier that, was generated in response to a notification event and, at operation **730**, the instant messaging engine **230** may transmit the notification message in a response to the instant messaging client **160** associated with the instant messaging identifier.

In some embodiments, the notification module **650** may be able to identify one or more transactions associated with the instant messaging engine or associated with the instant messaging identifier and a product identified in the request. The example user interfaces of FIGS. **8**A and **8**B may help illustrate this.

FIG. **8**A is a user interface **800** illustrating a dialog between a user and an IM robot, according to various embodiments. As illustrated in FIG. **8**A, the user interface **800** is an instant messaging client on a client machine that shows messages of the user (User **122**) and the IM robot (IMRobot). In this fictional scenario, a user requests status information associated with "tickets" at message **805** ("Where are my tickets?"). The notification module **650** shown in FIG. **6** may identify one or more transaction associated with the user's instant messaging identifier "User**122**." The notification module **650** may also attempt to determine if there is a product identified in the request. In this case, the notification module **650** may determine that the term "tickets" in the request identifies the 2 tickets for the San Jose Sparks Game on Dec. 2, 2010. The notification module **650** may then retrieve one or more notification messages associated with the instant messaging identifier "User**122**" and the product "2 tickets for the San Jose Sparks Game on Dec. 2, 2010." The notification module **650** may generate a response message **810** to the user's request and have the response transmitted to the user. FIG. **8**B discusses a fictional scenario where the user does not identify a product in the request.

FIG. **8**B is a user interface **850** illustrating a dialog between a user and an IM robot, according to various embodiments. In this fictional scenario, a user requests status information but does not identify any product at message **855** ("Any updates?"). In one embodiment, the notification module **650** shown in FIG. **6** may simply retrieve one or more notification messages associated with the instant messaging identifier "User**122**." In another embodiment, the notification module **650** may identify one or more transaction associated with the user's instant messaging identifier "User**122**" and retrieve one or more notification messages associated with those one or more transactions. After retrieval of the notification messages, the notification module **650** may generate a response message **860** to the user's request and have the response transmitted to the user.

FIG. **9** is a diagrammatic representation of a machine in the example form of a computer system **900** according to various embodiments within which a set of instructions, for causing the machine to perform any one or more of the methodologies discussed herein, may be executed. In alternative embodiments, the machine operates as a standalone device or may be connected (e.g., networked) to other machines. In a networked deployment, the machine may operate in the capacity of a server or a client machine in server-client network environment, or as a peer machine in a peer-to-peer (or distributed) network environment. The machine may be a server computer, a client computer, a personal computer (PC), a tablet PC, a set-top box (STB), a Personal Digital Assistant (PDA), a cellular telephone, a web appliance, a network router, switch or bridge, or any machine capable of executing a set of instructions (sequential or otherwise) that specify actions to be taken by that machine. Further, while only a single machine is illustrated, the term "machine" shall also be taken to include any collection of machines that individually or jointly execute a set (or multiple sets) of instructions to perform any one or more of the methodologies discussed herein.

The example computer system **900** includes a processor **902** (e.g., a central processing unit (CPU) a graphics processing unit (GPU) or both), a main memory **904** and a static memory **906**, which communicate with each other via a bus **908**. The computer system **900** may further include a video display unit **910** (e.g., a liquid crystal display (LCD) or a cathode ray tube (CRT)). The computer system **900** also includes an alphanumeric input device **912** (e.g., a keyboard),

a cursor control device **914** (e.g., a mouse), a disk drive unit **916**, a signal generation device **918** (e.g., a speaker) and a network interface device **920**.

The disk drive unit **916** includes a machine-readable medium **922** on which is stored one or more sets of instructions (e.g., software **924**) embodying any one or more of the methodologies or functions described herein. The software **924** may also reside, completely or at least partially, within the main memory **904** and/or within the processor **902** during execution thereof by the computer system **900**, the main memory **904** and the processor **902** also constituting machine-readable media.

The software **924** may further be transmitted or received over a network **926** via the network interface device **920**.

While the machine-readable medium **922** is shown in an example embodiment to be a single medium, the term "machine-readable medium" should be taken to include a single medium or multiple media (e.g., a centralized or distributed database, and/or associated caches and servers) that store the one or more sets of instructions. The term "machine-readable medium" shall also be taken to include any non-transitory medium that is capable of storing, encoding or carrying a set of instructions for execution by the machine and that cause the machine to perform any one or more of the methodologies of the present invention. The term "machine-readable medium" shall accordingly be taken to include, but not be limited to, storage mediums such as solid-state memories, optical media, and magnetic media.

Thus, a method and system for automatically respond to a request for product information or transaction information is described. Although the present invention has been described with reference to specific example embodiments, it will be evident that various modifications and changes may be made to these embodiments without departing from the broader spirit and scope of the invention. Accordingly, the specification and drawings are to be regarded in an illustrative rather than a restrictive sense.

The Abstract of the Disclosure is provided to comply with 37 C.F.R. §1.72(b), requiring an abstract that will allow the reader to quickly ascertain the nature of the technical disclosure. It is submitted with the understanding that it will not be used to interpret or limit the scope or meaning of the claims. In addition, in the foregoing Detailed Description, it can be seen that various features are grouped together in a single embodiment for the purpose of streamlining the disclosure. This method of disclosure is not to be interpreted as reflecting an intention that the claimed embodiments require more features than are expressly recited in each claim. Rather, as the following claims reflect, inventive subject matter lies in less than all features of a single disclosed embodiment. Thus the following claims are hereby incorporated into the Detailed Description, with each claim standing on its own as a separate embodiment.

What is claimed is:

1. A computer-implemented method comprising:

receiving, via a messaging protocol, a request related to an item or service, wherein the request is an informal language request;

automatically converting, without user intervention, the informal language request into a formal language understood by a computing device;

retrieving, from a database, stored information about the item or service using at least the formal language understood by the computing device;

converting the stored information into a response to the request; and

transmitting, using the messaging protocol, the response to the request.

2. The method of claim **1**, wherein the item or service is a ticket to an event, and wherein the stored information comprises at least one of information about the ticket to the event and of information about the event.

3. The method of claim **1**, further comprising:

collecting the stored information over a network;

identifying that the stored information is related to the item or service; and

storing the information and the association between the information and the item or service in the database.

4. The method of claim **1**, wherein the response to the request includes a link associated with the item or service.

5. The method of claim **4**, wherein the link associated with the item or service is a link to a webpage where the item or service is offered for sale.

6. The method of claim **1**, further comprising:

transmitting, using the messaging protocol, a prompt to provide a search criteria;

receiving a reply to the prompt, the reply comprising the search criteria; and

searching the database for the stored information using the search criteria.

7. The method of claim **1**, wherein the request related to the item or service is associated with a messaging identifier, and wherein the method further comprises:

detecting a notification event; and

retrieving, in response to detecting the notification event, a message associated with the messaging identifier;

wherein the response to the request includes the message.

8. The method of claim **7**, further comprising:

identifying a transaction associated with the request, wherein the message is further associated with the transaction.

9. The method of claim **1**, further comprising:

generating a popularity score for the item or service, based on at least the informal language request and the retrieved information; and

assigning the popularity score to the item or service.

10. The method of claim **9**, further comprising:

retrieving the stored information about the item or service based on at least the request related to the item or service and the popularity score assigned to the item or service.

11. The method of claim **1**, wherein the messaging protocol is at least one of an instant messaging (TM) protocol, a short messaging service (SMS) messaging protocol, a multimedia messaging service (MMS) protocol, and a web browser-based messaging protocol.

12. A system comprising:

a machine having a memory and at least one processor configured to;

receive, via a messaging protocol, a request related to an item or service, wherein the request is an informal language request;

automatically convert, without user intervention, the informal language request into a formal language understood by a computing device;

retrieve, from a database, stored information about the item or service using at least the formal language understood by the computing device;

convert the stored information into a response to the request; and

transmit, using the messaging protocol, the response to the request, the response including the stored information.

13. The system of claim 12, wherein the system is further configured to comprising:

collect the stored information over a network:

identify that the stored information is related to an item or service; and

store the stored information and the association between the information and the item or service in the database.

14. The system of claim 13, wherein the system is further configured to:

access a website containing the product data.

15. The system of claim 12, wherein the system is further configured to:

transmit, using the messaging protocol, a prompt to provide a search criteria;

receive a reply to the prompt, the reply comprising the search criteria; and

search the database for the item or service using the search criteria.

16. The system of claim 12 wherein the request related to the item or service is associated with a messaging identifier, and wherein the system is further configured to:

detect a notification event;

retrieve, in response to the detecting of the notification event, a message associated with the messaging identifier, and

wherein the response to the request includes the message.

17. The system of claim 16, wherein the system is further configured to:

identify a transaction associated with the request, wherein the message is further associated with the transaction.

18. The system of claim 12, wherein the system is further configured to:

identify the item or service based on a popularity score of the item or service.

19. A non-transitory machine-readable storage medium comprising instructions that, when executed by one or more processors of a machine, cause the machine to perform operations comprising:

receiving, via a messaging protocol, a request related to an item or service, wherein the request is an informal language request;

automatically converting, without user intervention, the informal language request into a formal language understood by a computing device;

retrieving, from a database, stored information about the item or service using at least the formal language understood by the computing device;

converting the stored information into a response to the request; and

transmitting, using the messaging protocol, the response to the request.

20. The non-transitory machine-readable storage medium of claim 19, wherein the request related to the item or service is associated with a messaging identifier, and wherein the operations further comprise:

retrieving a notification associated with the messaging identifier, and

wherein the response to the request includes the notification.

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